

REMARKS

Claims 1-28 were pending in the application. Claims 1, 6, 20, 21, 23-26, and 28 have been amended. Upon entry of these amendments, Claims 1-28 will be pending and under active consideration. Claims 1, 6, 20, 21, 25, and 27 are independent.

Applicants submit respectfully that the amendments presented herein are supported fully by the claims and/or specification as originally filed and, thus, do not represent new subject matter.

Claims 23, 24, 26 have been amended to point out more particularly and claim more distinctly that which Applicants regard as their invention by now reciting "nanospheres" rather than "microspheres" to correct a typographical error.

Claims 1, 6, 20, 21, 25, and 28 are amended herein to recite that the magnetic substance of the present invention is associated *covalently* with the core particle. The amendments are supported fully by the claims and/or specification as originally filed and, thus, do not represent new subject matter. In particular, the amendments find support at page 6, lines 1-4.

Applicants respectfully request entry of the amendments and remarks made herein into the file history of the present invention. Reconsideration and withdrawal of the rejections set forth in the above-identified Office Action are respectfully requested.

I. The Rejection Under 35 U.S.C. § 102(b) Should Be Withdrawn

The Office Action, at paragraph 4, rejects Claims 1-19, 21, 22 and 25 under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 5,395,688 to

Wang *et al.* (hereinafter, "Wang"). The Office Action alleges that Wang discloses coated particles comprising a core particle and a magnetically responsive material containing magnetic particles and polymeric material (coating) associated on the surface of said core. In particular, with respect to Claim 22, the Office Action alleges that Wang teaches that the coating particles are bound to the core particle by a polymeric binder and thus they are covalently bonded to the core particle. Applicants traverse respectfully.

Applicants submit respectfully that Claims 1-19, 21, 22 and 25, as amended, are not anticipated by Wang because Wang does not disclose each and every element of those amended claims as is required for a *prima facie* showing of anticipation. In particular, Claims 1, 6, 20, 21, 25, and 27, as amended, are directed to particles, and methods of using particles, that have at least one magnetic substance **covalently attached** to a central core. Applicants submit respectfully that, despite the Office Action's allegation (noted above), Wang does not teach or suggest the covalent attachment of a magnetic substance to a core particle.

At Column 1, lines 43-47, and in greater detail at Column 3, lines 28-36 and lines 54-59, Wang describes the type of association and methods of associating the magnetic substance (metal oxide) with the core particle of Wang. In essence, Wang teaches that metal oxide particles are coated onto the surface of a core polymer sphere by trapping the metal oxide particles in a coating that is polymerized around the core particle, like insects trapped in amber. As taught in general at Column 3, lines 28-36, and in particular in Examples 6 *et seq.*, metal oxide particles are mixed with monomer, and the mixture is coated onto the surface of a core particle in the presence of a polymerization

initiator, thus creating new polymer coating around the core particle wherein the new polymer coating contains metal oxide particles trapped within the polymer matrix.

Applicants submit respectfully that neither the broad description presented by Wang nor the chemical recipes for producing the magnetic particles of Wang indicate that the magnetic substance is ***covalently attached*** to the core particle. As the Examiner is no doubt well aware, covalent bonds link atoms of a molecule through the sharing of electron clouds between the individual atoms, thus creating a tight association that is essentially permanent in the absence of an external force stronger than the shared bond. Applicants submit respectfully that Wang does not teach that the metal oxide particles take part in any chemical reaction that would result in a covalent (strong chemical) bond between the metal oxide particles and the core polymer particle. In fact, Wang teaches that, following the coating of the core particle with the first polymer layer containing the metal oxide, the "magnetic particles are then coated with a protective layer of polymer, preferably polystyrene, *to prevent the metal oxide from falling off.*" (Wang at Column 3, lines 34-36, emphasis added). Again, as Column 4, lines 26-31, Wang teaches that "it is preferred to overcoat the resulting fluorescent magnetic particles with a protective layer of polymer coating to further adhere the metal oxide to the surface of the fluorescent magnetic particles." Applicants submit respectfully that, if Wang taught the use of covalent attachment of the magnetic substance to the core particle, as recited in the amended claims of the present invention, no protective coating would be necessary; covalent attachment, alone, is sufficient to ensure that the magnetic substance remains attached to the core.

Accordingly, Applicants submit respectfully that the claims of the present invention, as amended, are patentably distinct from the teachings of Wang.

In view of the above, Applicants submit respectfully that the claims of the present invention, as amended, are not anticipated by Wang and that the rejection to Claims 1-19, 21, 22 and 25 under 35 U.S.C. § 102(b) has been overcome. Accordingly, Applicants request respectfully that the rejection to Claims 1-19, 21, 22 and 25 under 35 U.S.C. § 102(b) be withdrawn.

II. The Rejection Under 35 U.S.C. § 103(a) Should Be Withdrawn

The Office Action, at paragraph 6, rejects Claims 20, 27 and 28 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Wang in view of U.S. Patent No. 5,981,180 Chandler *et al.* (hereinafter, "Chandler"). The Office Action alleges that Wang discloses magnetically responsive beads comprising particles and magnetic substance on the surface of the particles useful in various clinical fields comprising biological assays. While admitting that Wang does not teach a method of pooling two subsets of such coated particles, the Office Action alleges that Chandler cures the deficiency of Wang by teaching a method of pooling of multiple subsets of beads for simultaneously detecting multiple analytes in a single assay step. The Office Action concludes that it would therefore have allegedly been obvious for one having ordinary skill in the art to apply the method taught by Chandler utilizing the coated particles of Wang in order to detect multiple analytes in a single assay step as suggested by Chandler. Applicants traverse respectfully.

Applicants submit respectfully that the novel magnetically responsive particles of the present invention are neither taught nor suggested by Wang, either alone or in combination with Chandler. As explained above, Wang fails to teach or suggest the use of covalent attachment of the magnetic substance to the core particle as claimed in the present claims, as amended. The Office Action does not allege that Chandler cures this deficiency of Wang. Accordingly, the combination of the Wang with Chandler fails to meet the threshold required for establishing a *prima facie* case of obviousness under 35 U.S.C. § 103(a).

Accordingly, Applicants submit respectfully that the rejection of Claims 20, 27 and 28 under 35 U.S.C. § 103(a) have been overcome, and Applicants request respectfully that the rejection of Claims 20, 27 and 28 under 35 U.S.C. § 103(a) be withdrawn.

III. Rejections Under 35 U.S.C. § 112, First Paragraph

At paragraph 1 of the Office Action, Claims 23, 24 and 26 were rejected under 35 U.S.C. § 112, first paragraph, as allegedly containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The Office Action alleges that the specification only provides a description of the magnetic substance being chosen from magnetic nanospheres but does not describe magnetic substance chosen from microspheres. Applicants traverse respectfully.

Without acquiescing in the propriety of rejection, and solely to advance prosecution of the present application, Claims 23, 24, 26 have been amended to point out more particularly and claim more distinctly that which Applicants regard as their invention by now reciting "nanospheres" rather than "microspheres" to correct a typographical error. Thus, as admitted in the Office Action, the rejected claims are now fully supported by the specification, which provides a description of the magnetic substance being chosen from magnetic nanospheres.

On this basis, Applicants submit respectfully that the rejection has been overcome, and Applicants request respectfully that the 35 U.S.C. § 112, first paragraph, rejection of Claims 23, 24 and 26 be withdrawn.

IV. Rejections Under 35 U.S.C. § 112, Second Paragraph

At paragraph 2 of the Office Action, Claim 26 was rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The Office Action alleges that, in Claim 26, lines 3 and 4, the term "microspheres" has no antecedent basis. Applicants traverse respectfully.

Without acquiescing in the propriety of rejection, and solely to advance prosecution of the present application, and as noted above, Claim 26 is amended herein to recite "nanospheres" rather than "microspheres" to correct a typographical error. Accordingly, as "nanospheres" is recited in line 2 of line Claim 26, the later recitations of "nanospheres" in lines 3 and 4 does indeed find adequate antecedent basis.

On this basis, Applicants suggest respectfully that the rejection has been obviated, and Applicants request respectfully that the 35 U.S.C. § 112, second paragraph, rejection of Claim 26 be withdrawn.

CONCLUSION

Applicants submit respectfully that the present application is in condition for allowance. Favorable reconsideration, withdrawal of the rejections set forth in the above-noted Office Action, and an early Notice of Allowance are requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 625-3500. All correspondence should be directed to our address given below.

AUTHORIZATION

Applicants believe there is no fee due in connection with this filing. However, to the extent required, the Commissioner is hereby authorized to charge any fees due in connection with this filing to Deposit Account 50-1710 or credit any overpayment to same.

Respectfully submitted,



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